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(54) Check [check] valve for a protective unit.

(57) The subject of the present invention is a check
valve for a protective unit.

It is comprised of a combination of three flexible membranes 1, 2, 3 of the same shape and dimensions : stacked on each other and held together by a single solder 4 on around three-quarters of their periphery, the non-soldered portion of the membranes 10 being left free, one of the exterior membranes 1 being attached so as to be sealed on the protective unit 8 and incorporating a perforation 6 corresponding to a perforation 7 of the unit, a U-shaped flexible mounting, held in place by friction between the two non-perforated membranes 2, 3 ensuring tension of the membranes, flattening the environmental membrane 2 against the above mentioned perforation 6.

[diagram]

It is designed for equipment used in gaseous environments to protect against radioactive or toxic elements.

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CHECK VALVE FOR A PROTECTIVE UNIT

The subject of the present invention is a check valve for a protective unit. It is intended for equipment used in gaseous environments to protect against radioactive or toxic elements.

The devices produced in the prior art are most often composed of valves and rigid valve seats mounted on housings that form projections, attached at various locations on the protective unit in order to ensure the evacuation of exhaust [used] gases. These assemblies lack tightness, they are expensive and their installation requires significant manual work. Moreover, the exterior projection that they form presents the risks of detachment and deformation.

There is a check valve made of two flexible membranes, one of which is perforated, closed on three sides, and holding between them a U-shaped tension spring, utilizing two parallel lines of soldering, also in a U-shape and located at various points on the said spring (French Patent No. 7343557, of the same inventor). This device, while addressing the principal defects of rigid valves, may present a defective seal, resulting from the internal soldering which has a tendency to separate the two membranes from each other.

The device according to the present invention eliminates these disadvantages. In fact, it makes it possible to obtain a check valve that is completely sealed and foolproof, with no external projection, with instant installation and utilizing elements available at a significantly lower costs.

It consists of a combination of three flexible membranes of the same shape and the same dimensions ; stacked up and held together by a single solder effected on around three-quarters of their periphery, the non-soldered portion of the membranes remaining free, one of the external membranes being attached in such a way that it is sealed onto the protective unit and including one perforation corresponding to a perforation of the unit, a U-shaped flexible mounting, held by friction between the two non-perforated membranes to ensure a tension of the membranes that results in

the medial membrane becoming flattened against the above-mentioned perforation. In the attached diagrams, given by way of non-restrictive example of one of the modes of production of the subject of the invention :

Figure 1 represents an overview of the subject of the invention.

Figures 2 and 3 show in a different scale, a cross-section in the direction of the arrows A-A of figure 1, Figure 2 representing the closed device, and Figure 3 representing the open device.

The device of Figures 1 through 3 is composed of three films or membranes 1, 2, 3, of a flexible, synthetic thermoplastic material, held together by one soldering 4 on the greater portion of the periphery and held by a mounting 5 that is flexible and U-shaped.

The external membrane 1 includes a perforation 6 corresponding to a perforation 7 made in the protective unit 8. The perforated membrane 1 is attached to the unit, by soldering or tight gluing [sealing] around the perforations 6 and 7, in such a way that the two perforations coincide and so that the gases leaving the unit 8 can do so only by passing between the perforated membrane 1 and the medial membrane 2 and by escaping between the non-soldered peripheral portions 10 of these two membranes, as shown by arrow 9 of Figure 3.

The flexible mounting 5 is composed of a U-shaped flexible steel wire. Its initial shape is such that it may be slipped between the medial membrane 2 and the non-perforated external membrane 3 and is held in place by friction. It is designed to hold the flexible membranes 1, 2, 3 in such a way that the medial membrane 2 flattens itself against the perforated membrane 1 when the external pressure is greater than or equal to that existing on the interior of the unit 8. If the pressure on the interior of the unit becomes greater than the external pressure, the medial membrane 2 separates itself, allowing the gases to pass as shown by arrow 9 (Figure 3). The subject device of the invention thus allows the evacuation of exhaust [used] gases, while at the same time preventing external gases from penetrating into the interior of the unit.

Thanks to its simplicity, its reduced size and its low unit cost, the device herein described lends itself particularly well to the production of check valves for pressurized protective units designed for aggressive atmospheres of any type.

The positioning of the various components impart to this device a maximum of useful benefits that have not until now been available with similar devices.

CLAIMS

1° Check valve for protective unit targeting equipment used to protect against radioactive or toxic elements in gaseous environments, having as its objects to allow the evacuation of used gases while preventing the penetration of outside gases into the interior of the unit, characterized in the combination of three flexible membranes of the same shape and the same dimensions (1, 2, 3), stacked up and held together by a single solder (4) produced on around three-quarters of their periphery, the non-soldered portion of the membranes (10) being left free, one of the external membranes (1) being sealed onto the protective unit (8) and including a perforation (6) coinciding with a perforation (7) of the unit, a U-shaped elastic mounting, situated between the two non-perforated membranes (2, 3) ensuring a tension of the membranes resulting in the flattening of the medial membrane (2) against the above-mentioned perforation (6) when the external pressure is greater than or equal to the internal pressure of the unit (8), and allowing the said medial membrane (2) to separate itself from the perforated membrane (1) in such a way as to ensure the evacuation of the used gases (arrow 9, Figure 3), when the internal pressure of the unit (8) exceeds the external pressure.

2° Device following Claim 1, characterized by the fact that the elastic armature (5) is held in place by friction between the two perforated membranes (2,3).